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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,716	08/13/2001	Antoine J. Rouphael	2001P14759US	8933

7590 08/17/2006

Siemens Corporation  
Attn: Elsa Keller, Legal Administrator  
Intellectual Property Department  
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EXAMINER

AGHDAM, FRESHTEH N

ART UNIT PAPER NUMBER

2611

DATE MAILED: 08/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/929,716	<b>Applicant(s)</b> ROUPHAEL, ANTOINE J.	
	<b>Examiner</b> Freshteh N. Aghdam	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 1-11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed on 6/20/2006 have been fully considered but they are not persuasive.

**Applicant's Argument:** On page 6 regarding claim 1, applicant argues that the claimed invention is not taught or suggested "processing an initial shaping filter by generating a noise data sequence for modeling channel noise and intersymbol interference."

**Examiner's Answer:** Vaananen teaches modeling channel noise and intersymbol interference (Par. 17, 19, and 41) for processing an initial shaping filter to obtain a final shaping filter (Par. 19 and 52). One of ordinary skill in the art would clearly recognize that the transmission channel is generally assumed as a time-varying, time-dispersive (i.e. intersymbol interference) AWGN (additive white gaussian noise) channel; therefore, for modeling the channel noise a white noise sequence is taken into the consideration.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaananen (US 2003/0091111), and further in view of de Lantremange (US 5,970,093).

As to claims 1-2, Vaananen teaches a method for reducing intersymbol interference in a communications system, comprising specifying an initial shaping filter; determining a level of intersymbol interference for a final shaping filter, wherein the final shaping filter is obtained by further processing the initial shaping filter including modeling channel noise and intersymbol interference; and updating final shaping filter coefficients iteratively until the steady state of the system is reached (Fig. 2, means 2 and 3; Par. 17,19, 41, and 52). One of ordinary skill in the art would clearly recognize that the transmission channel is generally assumed as a time-varying, time-dispersive (i.e. intersymbol interference) AWGN (additive white gaussian noise) channel; therefore, for modeling the channel noise a white noise sequence is taken into the consideration. Vaananen is not explicit about updating final shaping filter coefficients at optimal sampling points until the intersymbol interferences is at or below a desired level. de Lantremange teaches a method to reduce intersymbol interference wherein the coefficients are updated at optimal timing (i.e. symbol rate) until ISI reaches a steady state minimum level (Col. 3, Lines 1-15). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of de Lantremange with Vaananen in order to reject noise outside of the signal bandwidth including adjacent channel interferences to improve data transmission reliability (Col. 3, Lines 11 and 12).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vaananen and de Lantremange, further in view of Segal (US 6,647,069).

As to claim 3, Vaananen and de Lantremange teach all the subject matter claimed above, except for the initial shaping filter to be convolved with its complex matched filter counter part. Segal, in the same field of endeavor, teaches convolving the spectral shaping filter (Fig. 4, means 405 and 414) with its matched filter (Fig. 4, means 414). Therefore it would have been obvious to one of ordinary skill in the art to combine the teaching of Segal with Vaananen and de Lantremange in order to improve speed of data transmission (Abstract).

Claims 4-5 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segal, further in view of Vaananen and de Lantremange.

As to claims 4-5 and 10-11, Segal teaches a spectral filter (Fig. 4, means 405) with certain time domain and spectral characteristics being convolved with a matched filter (Fig. 4, means 414); convolving said given filter and said matched filter to obtain an initial shaping filter (Fig. 4, means 414 and 417); generating a noise data sequence, wherein said noise data sequence comprising a channel noise and intersymbol interference model (Fig. 4, means 414 and 417; Col. 5, Lines 29-64); deriving an optimized filter responsive to the convolution between the data sequence that includes noise and the given filter since as one of ordinary skill in the art would clearly recognize that the relationship between the input and output of any filter in the time domain is the convolution of the input with the transfer function of the filter, which is equal to the output signal of the filter. And minimizing an error metric at points on the initial shaping

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filter for producing a signal with minimal ISI period (Fig. 4, means 417). Segal is not explicit about convolving the noise data sequence with the given filter; and deriving an optimized shaping filter responsive to the convolution by adaptively minimizing an error metric at points on the initial shaping filter corresponding to optimal sampling points. Vaananen teaches convolving the generated data that includes noise with the given filter (Fig. 2, Par. 19). One of ordinary skill in the art would clearly recognize that the relationship between the input and output of any filter in the time domain is the convolution of the input with the transfer function of the filter, which is equal to the output signal of the filter. Deriving an optimized shaping filter responsive to the convolving by adaptively minimizing an error metric using a LMS algorithm (Par. 19) to produce a signal with a minimal ISI period (Par. 19 and 52). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Vaananen with Segal in order to reduce the effect of ISI more accurately by adaptively minimizing an error metric. de Lantremange teaches updating the filter coefficients at optimal sampling points (Col. 3, Lines 4-15). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of de Lantremange with Segal and Vaananen to reject noise outside of the signal bandwidth including adjacent channel interferences to improve data transmission reliability (Col. 3, Lines 11 and 12).

Claims 6-7 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segal.

As to claim 6, Segal teaches a device comprising a coder for encoding (Fig. 4, means 404); an RF modulator (Fig. 4, means 406); and a shaping filter for shaping said

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coded data, the shaping filter generated by constraining that the filter coefficients in their adaptation at the optimal sampling point, an initial shaping filter (Fig. 4, means 405 and 410) comprising a channel noise model and intersymbol interference shaping filter for minimizing intersymbol interference (Fig. 4, means 409-410), said initial shaping filter derived from a matched filter and white noise data sequence (means 414 and 410). One of ordinary skill in the art would clearly recognize that the transmission channel is generally assumed as a time-varying, time-dispersive (i.e. intersymbol interference) AWGN (additive white gaussian noise) channel; therefore, for modeling the channel noise a white noise sequence is taken into the consideration.

As to claim 7, Segal further teaches convolving the spectral shaping filter with its matched filter (Fig. 4, means 410).

As to claims 8-9, Segal teaches all the subject matter claimed above, except for updating final shaping filter coefficients iteratively until the intersymbol interference is at or below a desired level. Laamanen discloses updating final shaping filter coefficients iteratively until the intersymbol interference is at or below a desired level (Abstract; Fig. 4). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Laamanen with Segal in order to reduce the intersymbol interference in a communication system by iteratively adjusting the final shaping filter coefficients until the error metric is minimized.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571) 272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

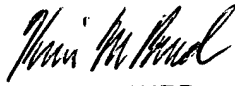
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Freshteh Aghdam  
August 11, 2006

  
**KEVIN BURD**  
**PRIMARY EXAMINER**